

JSC/EC5 U.S. Spacesuit Knowledge Capture (KC) Series Synopsis

All KC events will be approved for public using NASA Form 1676.

This synopsis provides information about the Knowledge Capture event below.

Topic: EVA Development and Verification Testing at NASA's Neutral Buoyancy Laboratory

Date: August 14, 2012 **Time:** 11:30-12:30 pm **Location:** JSC/B5S/R3102

DAA 1676 Form #: 29347

A PDF of the presentation is also attached to the DAA 1676 and this is a link to all lecture material and video: <\\js-ea-fs-01\pd01\EC\Knowledge-Capture\FY12 Knowledge Capture\20120814 Jairala-Durkin EVA Testing-NBL\For 1676 Review and Public Release>

*A copy of the video will be provided to NASA Center for AeroSpace Information (CASI) via the Agency's Large File Transfer (LFT), or by DVD using the USPS when the DAA 1676 review is complete.

Assessment of Export Control Applicability:

This Knowledge Capture event has been reviewed by the EC5 Spacesuit Knowledge Capture Manager in collaboration with the author and is assessed to not contain any technical content that is export controlled. It is requested to be publicly released to the JSC Engineering Academy, as well as to CASI for distribution through NTRS or NA&SD (public or non-public) and with video through DVD request or YouTube viewing with download of any presentation material.

Presenters: Juniper Jairala and Robert Durkin

* Personal contact information has been removed in the final PDF of the original PowerPoint presentation, which is attached to this 1676, and will be used for distribution.

Synopsis: As an early step in preparing for future EVAs, astronauts perform neutral buoyancy testing to develop and verify EVA hardware and operations. To date, neutral buoyancy demonstrations at NASA JSC's Sonny Carter Training Facility have primarily evaluated assembly and maintenance tasks associated with several elements of the ISS. With the retirement of the Space Shuttle, completion of ISS assembly, and introduction of commercial participants for human transportation into space, evaluations at the NBL will take on a new focus. In this session, Juniper Jairala briefly discussed the design of the NBL and, in more detail, described the requirements and process for performing a neutral buoyancy test, including typical hardware and support equipment requirements, personnel and administrative resource requirements, examples of ISS systems and operations that are evaluated, and typical operational objectives that are evaluated. Robert Durkin discussed the new and potential types of uses for the NBL, including those by non-NASA external customers.

Biographies: Juniper Jairala was born in Chicago, Illinois and was raised there, in San Diego, California, and in Quito, Ecuador. After receiving a bachelor of science in mechanical engineering from Cornell University in 1997, Jairala worked as a ride-and-show engineer building Universal Studios and Warner Brothers theme parks in Los Angeles, Japan, and Spain until 2001. Afterward, she worked at NASA

Dryden in Flight Operations before earning a master of science in aerospace engineering sciences, with an emphasis in bioastronautics, at the University of Colorado Boulder in 2004. From 2005 to 2008, Jairala worked as a NASA graduate cooperative education student at JSC, continued graduate education with an emphasis in integrated physiology at UCLA, and worked as an employee of several commercial spaceflight companies (Blue Origin, X Prize, SpaceX, Andrews Space, and Zero Gravity Corporation). In 2008, she returned to JSC with Jacobs Technology, working for the CTSD as a project and test engineer on the EVA Development and Verification Test Team, where she continues to work today.

Robert Durkin was born and raised in Herington, Kansas. He received a bachelor of science in aerospace engineering in 1993 from Wichita State University. He started his civil servant career at NASA in 1993 at the Weightless Environment Training Facility (WETF). He transitioned to the NBL in 1997 and was responsible for the Breathing Gas System and was the flight lead for STS-88, the first NASA mission trained in the NBL. In 1998, he moved to EA and was the EM division lead for Mockup Design and Fabrication. In 2001, he became the assistant to the subsystem manager for Shuttle Landing Systems. In 2002, he returned to the NBL as the facility manager and has continued to take jobs of higher responsibility in the facility. He became the chief of the NBL in August 2010.

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